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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,485	05/30/2000	Shunpei Yamazaki	0756-2154	1593

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EXAMINER

SARKAR, ASOK K

ART UNIT PAPER NUMBER

2891

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/580,485

Applicant(s)

YAMAZAKI ET AL.

Examiner

Asok K. Sarkar

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 8, 9, 13-20, 30, 31, 33 and 36-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 5, 17-20, 37-40 and 47-71 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 9, 13-16, 30, 31, 33, 35 and 41-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/13/2006</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Applicant is advised that the Notice of Allowance mailed June 26, 2006 is vacated. If the issue fee has already been paid, applicant may request a refund or request that the fee be credited to a deposit account. However, applicant may wait until the application is either found allowable or held abandoned. If allowed, upon receipt of a new Notice of Allowance, applicant may request that the previously submitted issue fee be applied. If abandoned, applicant may request refund or credit to a specified Deposit Account.

2. Prosecution on the merits of this application is reopened on claims 1 – 3, 8 – 16, 30, 31, 33, 36 and 41 – 46 considered unpatentable for the reasons indicated below:

The newly submitted IDS on September 13, 2006 contain references that can be applied to reject some allowable claims.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 1 – 3, 8, 13, 15, 30, 31, 33, 36 and 41 – 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa, US 6,057,647 in view of Yamazaki, JP 10268360 (English Abstract).

Regarding claims 1 – 3 and 31, Kurosawa teaches a method for manufacturing an electrical device, said method comprising:

- forming at least a thin film transistor 3 on an insulating surface 31;
- forming a first insulating film 52 over the thin film transistor;
- forming a pixel electrode 202 over the insulating film, said pixel electrode electrically connected to the thin film transistor 3 with reference to Fig 16 and the descriptions under the second embodiment in column 12.
- forming a EL layer 207 over the pixel electrode 202;
- forming a second electrode 205 over the EL layer with reference to Fig. 16 and associated descriptions in between column 12, line 42 and column 13, line 41,

wherein the EL layer is selectively formed through an ink jet method in column 15, line 42

Kurosawa fails to form the first insulating film comprising an organic resin over the thin film transistor; and forming a second insulating film comprising silicon nitride or silicon nitride oxide (claims 1 and 31), aluminum nitride (claim 2) and diamond like carbon (claim 3) on the first insulating film.

Yamazaki teaches a method for making a light emitting device in which he teaches forming a first insulating film comprising an organic resin 123 over the thin film transistor and forming a second insulating film comprising aluminum nitride or diamond like carbon 125 on the first insulating film with reference to Fig. 1 for the benefit of obtaining a flat surface with the resin and to effectively conduct the heat away by the DLC (see the English Abstract and paragraph 33 of the Japanese article).

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Kurosawa and form the first insulating film comprising an organic resin over the thin film transistor; and forming a second insulating film comprising AlN or diamond like carbon on the first insulating film for the benefit of obtaining a flat surface with the resin and to effectively conduct the heat away by the DLC as taught by Yamazaki in the English Abstract.

Regarding claims 1 and 31, Yamazaki fails to teach silicon nitride or oxynitride as the second insulating film. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Kurosawa and form the first insulating film comprising an organic resin over the thin film transistor; and forming a

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second insulating film comprising silicon nitride or oxynitride on the first insulating film for the benefit of obtaining a flat surface with the resin and to effectively conduct the heat away by the nitride since the nitride or oxynitride materials have high thermal conductivities and high thermal conductivity materials are taught by Yamazaki in the English Abstract and the Japanese disclosure.

Regarding claims 8, 13 and 15, Kurosawa teaches organic EL layer in column 12, line 42.

Regarding claims 30, 33 and 36, Kurosawa teaches electrodes made of Li or Mg in column 15, line 46.

Regarding claims 41 – 46, Kurosawa teaches forming contact hole in the insulating film and forming the pixel electrode on the insulating film, wherein the pixel electrode is in contact with the side surface of the contact hole and edges of the insulating film, but fails to teach forming a contact hole in the first and second insulating films, wherein an upper diameter of the contact hole is longer length than a lower diameter of the contact hole and forming the pixel electrode on the second insulating film, wherein the pixel electrode is in contact with the side surface of the contact hole and edges of the first and second insulating films.

Yamazaki teaches forming a contact hole in the first and second insulating films, wherein an upper diameter of the contact hole is longer length than a lower diameter of the contact hole and forming the pixel electrode on the second insulating film, wherein the pixel electrode is in contact with the side surface of the contact hole and edges of

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the first and second insulating films for the benefit of providing a well anchored contact within the polymeric film with reference to Fig. 1.

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Kurosawa and form a contact hole in the first and second insulating films, wherein an upper diameter of the contact hole is longer length than a lower diameter of the contact hole and forming the pixel electrode on the second insulating film, wherein the pixel electrode is in contact with the side surface of the contact hole and edges of the first and second insulating films for the benefit of providing a well anchored contact within the polymeric film as taught by Yamazaki with reference to Fig. 1.

7. Claims 9, 14 and 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurosawa, US 6,057,647 in view of Yamazaki, JP 10268360 (English Abstract) as applied to claim 3 above, and further in view of Shimoda, SID 99 Digest, p 376 – 379.

Kurosawa in view of Yamazaki fails to teach the inkjet method using piezo element.

Shimoda in a published article titled "Multicolor Pixel patterning of Light-Emitting Polymers by Ink-let Printing" teaches the inkjet method using piezo element in Table 1 in page 377, column 1 under the heading "Ink – jet machine".

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Kurosawa's method by depositing the EL layers by inkjet method using a piezo element as taught by Shimoda since such machines are commercially used for inkjet printing.

***Allowable Subject Matter***

8. Claims 4, 5, 17 – 20, 37 – 40 and 47 – 71 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 4, 17, 18, 37, 38 and 47 – 49 recite, inter alia, a method of forming an electrical device comprising the steps of forming a third insulating film over a first and a second insulating films between the thin film transistor and the pixel electrode wherein the first and third insulating films comprise silicon nitride. The art of record does not disclose or anticipate the above limitation in combination with other claim elements nor would it be obvious to modify the art of record so as to form a device including the above limitation.

Claims 5, 19, 20, 39, 40, 50 and 51 recite, inter alia, a method of forming an electrical device comprising the steps of forming a third insulating film over a first and a second insulating films between the thin film transistor and the pixel electrode wherein the first and the third insulating films comprise aluminum oxide. The art of record does not disclose or anticipate the above limitation in combination with other claim elements nor would it be obvious to modify the art of record so as to form a device including the above limitation.

Claims 52 – 57 recite, inter alia, a method of forming an electrical device comprising the steps of forming a third insulating film over a first and a second insulating films between the thin film transistor and the pixel electrode wherein the first and the third insulating films comprise diamond like carbon. The art of record does not disclose or anticipate the above limitation in combination with other claim elements nor



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would it be obvious to modify the art of record so as to form a device including the above limitation.

Claims 58 – 71 recite, inter alia, a method of forming an electrical device in which the thin film transistor is covered with up to five insulating films with the third insulating film being an organic material. The art of record does not disclose or anticipate the above limitation in combination with other claim elements nor would it be obvious to modify the art of record so as to form a device including the above limitation.

### ***Conclusion***

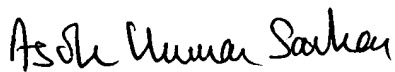
9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asok K. Sarkar whose telephone number is 571 272 1970. The examiner can normally be reached on Monday - Friday (8 AM- 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William B. Baumeister can be reached on 571 272 1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Asok K. Sarkar  
December 11, 2006

Primary Examiner